

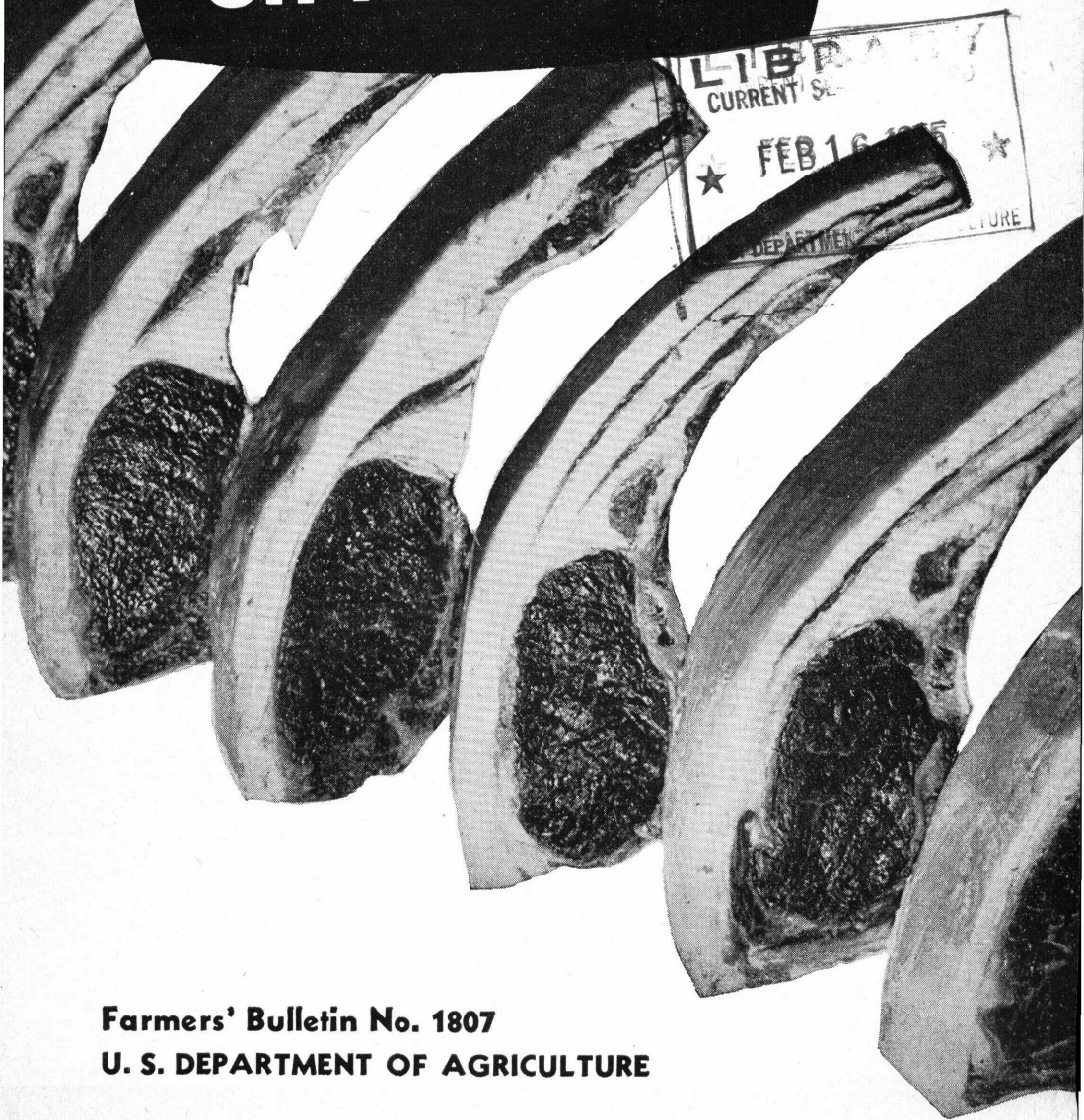
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p. 5

MEAT

LAMB and MUTTON on the Farm



Farmers' Bulletin No. 1807

U. S. DEPARTMENT OF AGRICULTURE

THE EASE with which lambs and sheep can be slaughtered on the farm makes them a convenient source of fresh meat for family use.

Lamb carcasses are a handy size, weighing 25 to 45 pounds. They yield comparatively small cuts, all of which are normally tender. Any surplus that cannot be used fresh, or shared with a neighbor, may be canned or frozen. Some cuts can be cured satisfactorily. This meat can be kept as an emergency food reserve or as a source of variety in the diet.

Because of the general preference, in the United States, for lamb rather than mutton, the greater part of the slaughter is at the lamb stage. In this bulletin the discussion and the directions for preparation of lamb apply to mutton also unless otherwise specified. Some persons prefer the flavor of mutton to that of the less-mature lamb.

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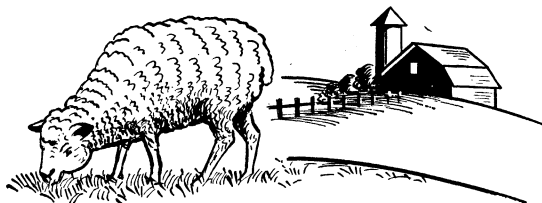
LAMB AND MUTTON ON THE FARM

Slaughter

Curing

Freezing

Canning



By K. F. WARNER,¹ and W. L. SULZBACHER, *Bacteriologist, Animal Husbandry Division, Bureau of Animal Industry, Agricultural Research Administration*

CONVENIENCE OF LAMB FOR HOME USE

SERVING LAMB from time to time is a good way to vary the fresh meat in the family's diet. A lamb can be dressed quickly, and the handy-weight cuts are normally tender. A lamb carcass is small enough so that with refrigeration one family or more will ordinarily make use of the meat before it spoils, even in summer.

An 80-pound lamb produces a dressed carcass weighing about 36 to 40 pounds. The yield may vary above or below that range because of several factors, including degree of finish and weight of pelt, but 47 to 50 percent of live weight is a good average dressing percentage. The trimmed leg roasts from a 40-pound carcass weigh about 6 pounds each, and the shoulder roasts about 5 pounds each. There will be about 7 pounds of breast and neck and 8 pounds of loin and rib to be roasted

or cut into about 30 medium-thick chops.

All these cuts are normally tender enough to be adapted to cooking in any of several ways. The shoulder and even the breast may be oven-roasted if the cook prefers this to braising the breast with vegetables. Cold roast lamb, sliced or ground, is a choice sandwich meat, and the leftovers from any lamb dish can be made into a wide variety of tasty combinations.²

FLAVOR OF LAMB

About two-thirds of the lamb eaten in the United States is consumed in the section that lies north of Washington, D. C., and east of Pittsburgh. Only a very small amount of lamb is eaten by the residents of rural areas. It seems probable that this sectional popularity of lamb is caused not so much by inherent differences in the tastes of the respective populations as by established and accepted food habits. Many farm families, who formerly were not familiar with lamb, have

¹ Mr. Warner, formerly extension meat specialist in the Agricultural Research Administration, transferred to the Office of Foreign Agricultural Relations April 1951.

² For information on methods of cooking lamb, see Leaflet 28, Lamb as You Like It.

found that they enjoy its characteristic flavor and have added this convenient fresh meat to their regular diet.

Contrary to the opinion of some consumers that the fell—the thin, paperlike membrane covering the lamb carcass—is the cause of the characteristic flavor, this covering does not affect the flavor and serves to prevent the meat from drying out during storage and when being roasted. Even slow skinning of a lamb, which was thought to have some effect on the flavor of the meat, has been found to have no influence, provided the carcass is kept clean. Take care to keep the carcass clean while it is being dressed, but if the dirt or grease of the wool soils the meat accidentally, prompt and thorough washing with a clean cloth and hot water will prevent serious damage.

FACTORS AFFECTING QUALITY

The desirability of lamb as a meat for home use or for market depends on four principal factors, as does that of other meat. These factors are the breeding of the animal, how and to what extent it has been fed, the age at which it is slaughtered, and the method of handling the meat.

Lambs of the so-called mutton breeds are generally more suitable for meat than those of breeds bred primarily for wool production. The advantage of using lambs of the mutton breeds for meat is that they usually fatten more readily, dress a higher proportion of carcass to live weight, and yield meatier roasts and chops.

A well-finished lamb carcass is fairly well covered with fat over the legs and shoulders as well as over the back. However, a high degree of finish is not essential for a lamb that is to be slaughtered for home use. A lamb that is moderately well fattened and has been making fairly

rapid gains should produce a carcass having tender, desirable meat.

The term "mutton," as commonly used commercially, applies to the meat of older sheep, that is, ewes (over 12 months of age) and wethers (over 18 months of age). Such meat, especially that from well-fed sheep, though frequently less tender than the meat from the younger lambs, also is suitable for use.

Only a very small proportion of sheep and lambs examined by the Federal meat-inspection service are found badly diseased. Nevertheless care should be taken to see that all animals selected for slaughter are thrifty and healthy.

SLAUGHTERING EQUIPMENT

A sharp knife, preferably a skinning knife, a steel for sharpening knives, and a saw are the principal tools needed to dress a lamb. The equipment should include about 6 feet of clean quarter-inch rope with which to hang the lamb to a stoutly anchored 2- by 4-inch beam or a tree limb about 7 feet from the ground. A bench, box, or even a clean floor upon which to lay the lamb, a tub for the offal, a pan or bucket for heart, liver, and tongue, a bucket of hot water, and a few clean cloths complete the list.

SLAUGHTERING AND DRESSING LAMBS

Lambs or sheep selected for slaughter should be penned the day before so that they can be caught without running or exciting them. Water should be supplied freely, but all feed should be withheld for 24 hours before slaughtering. This will make dressing easier.

STICKING

A lamb should be held for sticking so that the blood will not drain into the fleece, making it difficult to

do a clean job of skinning. A lamb may be laid down on a box or bench (fig. 1), but an easier, cleaner job of sticking can usually be done by tying the hind legs together and suspending the lamb from a beam, limb, or other stout support that is about 7 feet from the ground (fig. 2). Hold the lamb's nose in the left hand, being careful not to shut off its breath. Run a sharp, pointed knife clear through the neck close to the neck bone just behind the angle of the jaw and below the base



48005-B

Figure 1.—Sticking a lamb on a bench. The operator's right knee holds the lamb in place.

of the ear. Cut out at right angles to the neck. If the knife was not close enough to the neck bone to pick up and sever the main arteries and veins, cut back to or against the bone.

STUNNING

The stuck animal should be promptly stunned by breaking the neck. To do this, grasp the nose with the left hand and the wool on the poll (between the lamb's eyes) with the right. Pull the nose up and back and push down hard on the poll with the heel of the right

hand (fig. 3). If the muscles next the neck bone have been cut in sticking, the big atlas joint at the base of the head should break open rather easily. Stunning the animal is a humane procedure.

SKINNING THE LEGS

When the lamb has been thoroughly bled, it is laid on a clean floor or platform for skinning. There are many ways to remove the pelt. The one described here is not the quickest but is ordinarily the easiest for the beginner. The pelt is opened by removing a narrow strip of skin from the front of the front legs and from the back of the hind legs. The pelt is then pushed or "fisted" (see p. 8) off the brisket, belly, and flanks before the carcass is hung up again.

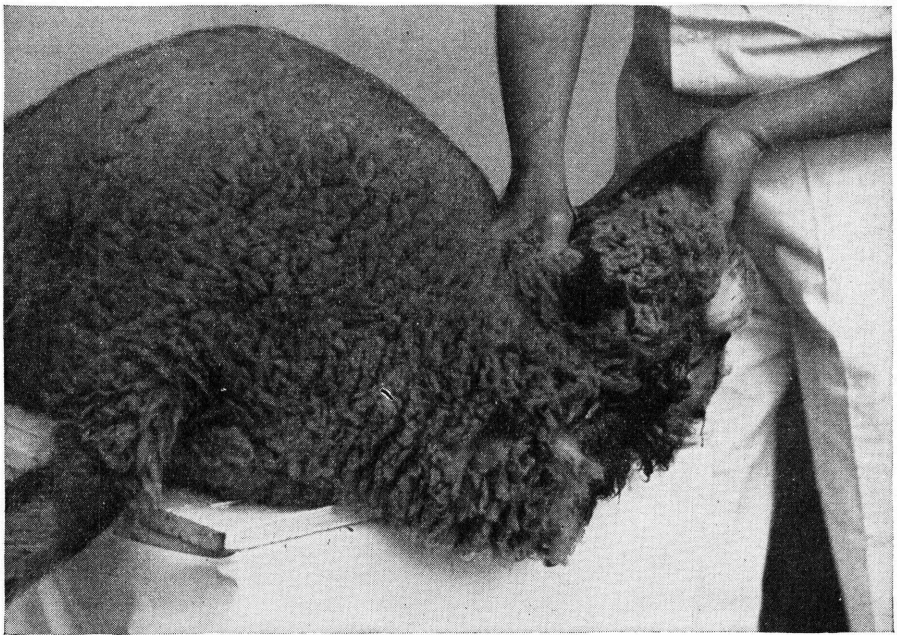
Stand at the side of the lamb, holding the front leg between the knees with the carcass leaning away, thus stretching the leg tight (fig. 4). Raise a narrow strip of pelt from below the lamb's knee to the hoof head. Extend the opening in the pelt from the point below the knee to a point well in front of the brisket. Care should be taken not to cut too deep or through the paper-thin, protective membrane, or fell, that envelops the meat just underneath the skin. To avoid cutting through the fell and into the meat, the beginner should "choke" the knife, hold it with the cutting edge up against the skin, rather than toward the meat, and cut with a short, curving, wrist motion that swings only the point of the knife against the pelt (fig. 5). The left hand raises the pelt from the meat and holds it tight while the knife is turned against it.

The opening over the front of the left leg joins that made over the right leg in front of the brisket. The pelt is then opened down the neck to the opening made by sticking.



40672-B

Figure 2.—Sticking a suspended lamb. With the left hand hold the head securely, to keep it from swinging.



65865-B

Figure 3.—Stunning a lamb. Pull the head up and back with the left hand and push down hard with the heel of the right hand.

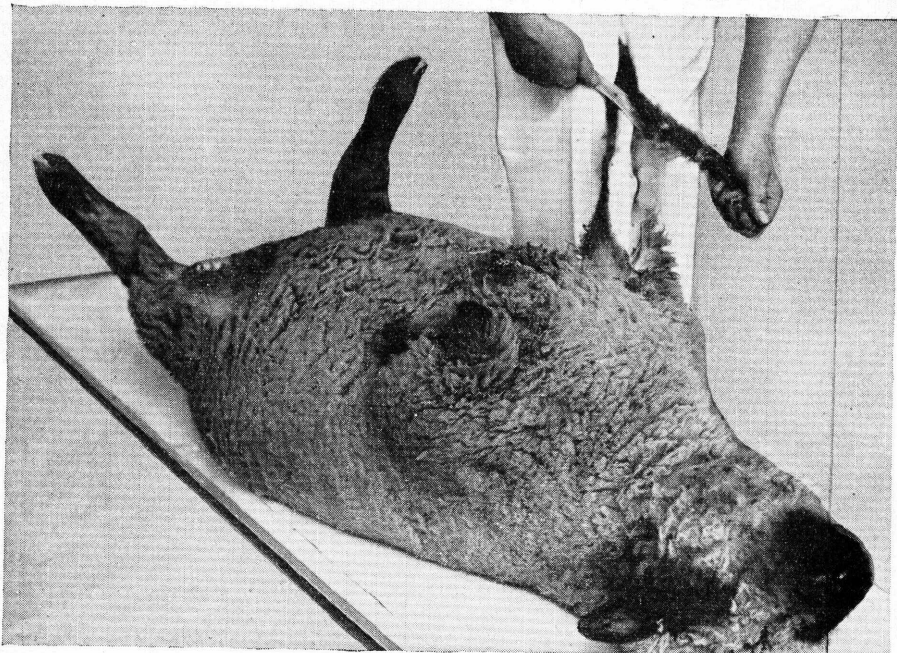


Figure 4.—Opening the pelt over the front of the front leg. Keep the edge of the knife against the leg rather than up against the skin. 65866-B

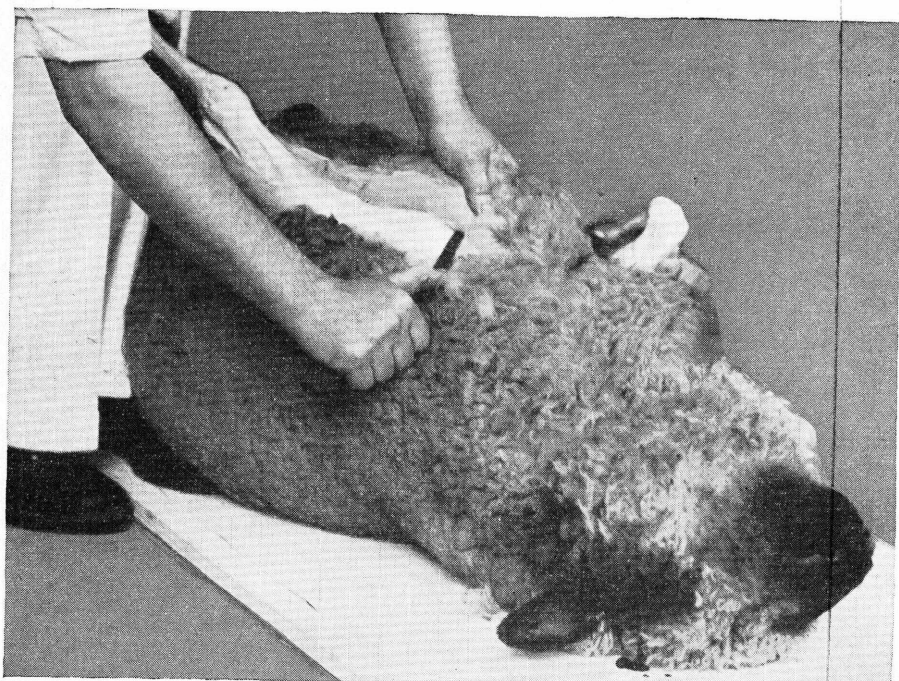


Figure 5.—Opening the pelt at the brisket. Slow, short strokes up against the pelt will prevent cutting down into the meat. 65867-B



65868-B

Figure 6.—Pulling the pelt over the brisket. Hold the pelt at the end and pull steadily.

The V-shaped strip of pelt over the brisket that has been formed by opening the fleece over the front legs is grasped at the point or head end and pulled up and back over the brisket (fig. 6). If the pelt sticks to the brisket and the fat and fell begin to tear, pulling should be stopped and fisting begun.

The hind leg is held between the knees, in the same manner as the front leg, and a strip of pelt raised from a point below the hock along the tendon and into the hoof head. The cut is extended to a point just in front of the anus, using the same careful, rotary wrist motion to prevent the point of the knife cutting into the choice leg muscles. Still holding the leg between the knees, skin out the hock and leg and then unjoint the foot at the lowest joint or the one next the hoof (fig. 7).

If the foot has not been properly unjointed at the hoof head, as described, these tendons may pull out when the carcass is hung.

Slip the knife between the leg bone and the tendons to make an opening for the string or gambrel used in hanging the carcass. Note that there are two tendons. Be sure to raise both as one may not be strong enough. Skin out the other hind leg and, grasping the pointed strip of pelt, pull it back over the cod or udder as far as it will go without tearing the flesh (fig. 8).

FISTING THE PELT OFF THE BELLY

Lay the lamb, back down, on a bench or box of convenient height. Clean hands are necessary to produce a clean carcass. The bucket of hot water and dry cloths should be

available to wash and dry the hands whenever they become soiled.

The clenched fist is used as a wedge between the pelt and the fell. The thumb lying on top of the first finger is used to lead the fist in under the pelt. The motion and pressure of the fist are up against the skin, pushing and working it away from the meat, rather than pushing the meat away from the skin. The left hand follows along just above the right, grasping the wool and holding the skin taut as the fist pushes against it underneath. Jamming through the fell and muscles of the carcass with the fist will result in an unattractive carcass but will not ruin it. With a little experience one can soon tell by the feel whether fisting is proceeding properly.

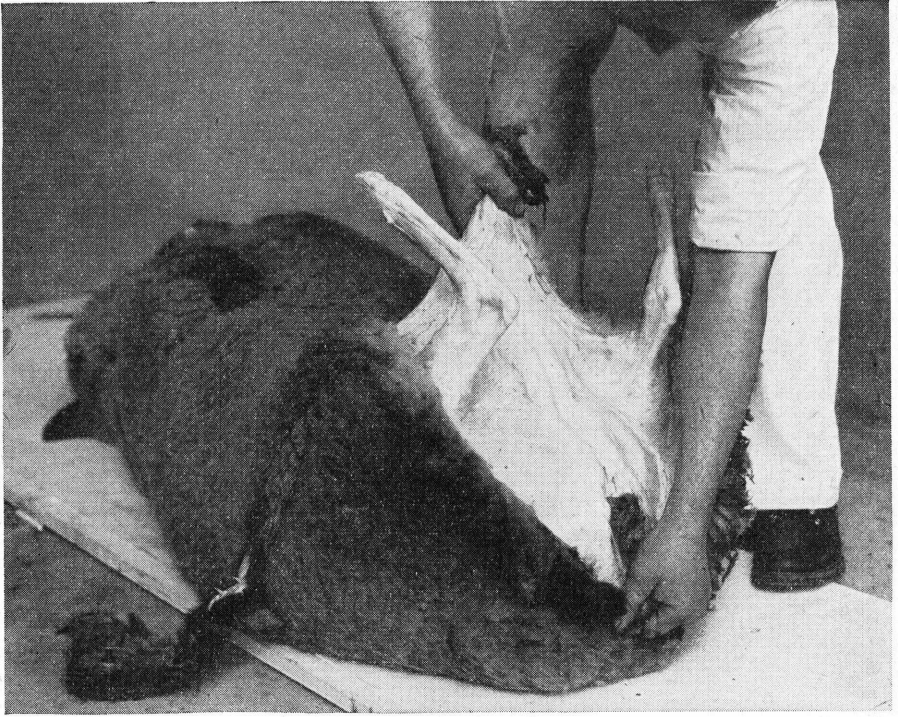
Fist in on one side of the brisket, loosening the pelt to the navel or as far down as can be reached conveniently (fig. 9). Work down behind the shoulder but do not try to loosen the pelt along the whole side. Fist in on the other side of the brisket and repeat the operation. The pelt usually sticks to the brisket. Sometimes it can be worked off from behind. Often the thumb can work it loose from each side. Occasionally a knife is needed to cut the skin from the center of the brisket. Young and well-fattened lambs skin more easily than older and thinner sheep.

To loosen the pelt at the rear, stand between the hind legs, grasp the pelt with the left hand, and work the right fist down the center or over



Figure 7.—Unjointing the foot from the skinned hind leg.

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65871-B

Figure 8.—Pulling the pelt free up to the cod or udder.



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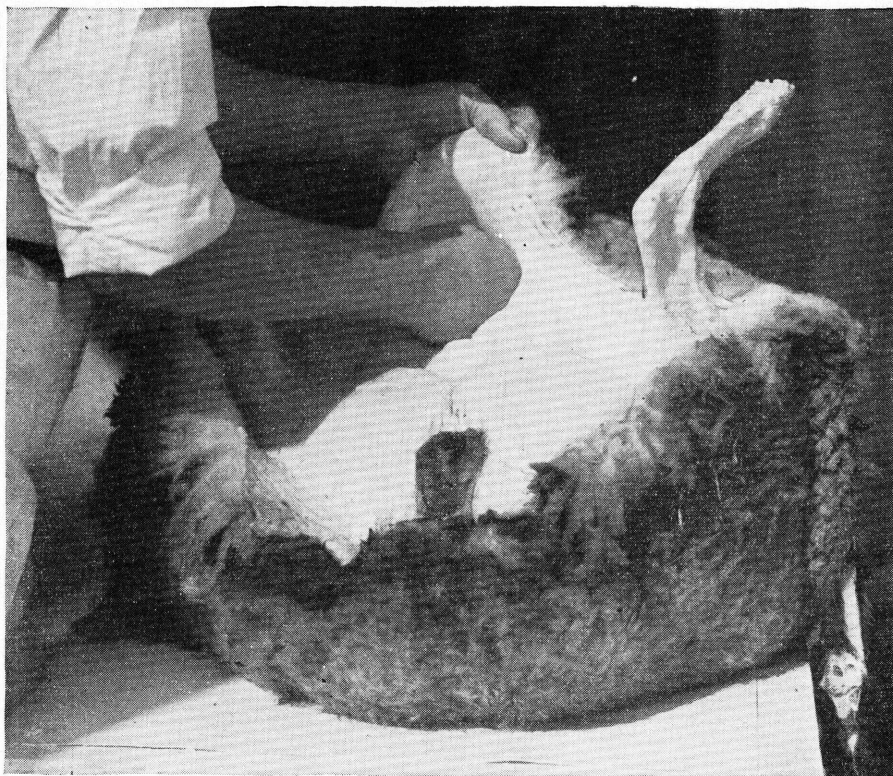
Figure 9.—Fisting the pelt down the side of the brisket. Note the white, clean, unbroken fat and fell.

the cod or udder to the navel (fig. 10). The hand and arm are then pushed sideways, freeing the pelt over the flank and inside of the hind leg. Note that fisting is begun down the middle instead of at the side as was done when skinning the brisket. This lessens the danger of getting beneath and tearing the flank muscles.

REMOVING THE PELT

When the legs are skinned and the pelt fisted off the belly, heavy clean cord is run beneath the tendons of the hind legs, and tied around the legs, or a gambrel may be inserted, and the carcass suspended. A hook or support about 7 feet from the floor gives a good working height.

Cut the pelt open down the middle of the belly, cutting loose the



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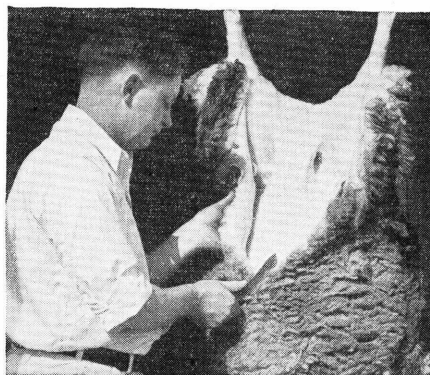
Figure 10.—Holding the pelt tight and pushing the fist forward over the cod or udder.

navel (fig. 11). Holding the pelt tight with the left hand, work the right fist around the stifle and then up the outside of the left leg (fig. 12). Change hands, or cross hands, and fist out the lamb's right hind leg. This rolls the fleece away from the clean carcass.

Fist down past the shoulder, pull the skin free from the foreleg, and fist out the side of the neck (fig. 13). Push the pelt free from the sides and fist off the rump. The rump may stick, and it will be necessary to free it by working from both sides. From underneath the dock push up until the pelt hangs only by the skin that is fastened to the anus and tail (fig. 14).

There is a true joint at the lower end of the sheep's front leg bone which must be opened to cut off the

pastern and foot of mature sheep. Just above (up the leg from) the true joint is a cartilaginous suture in the bone that can be broken apart



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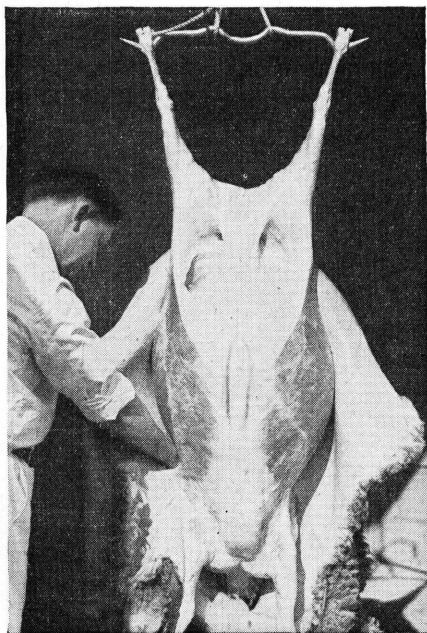
Figure 11.—Opening the pelt down the middle.



65875-B

Figure 12.—The fist wedges in and up along the leg

on most lambs. This suture or "lamb joint" (fig. 15) is at the widest bulge in the end of the foreleg, or just above the true or "mutton joint." It is customary to cut off the forefeet of lambs at this suture, thus identifying the carcasses as those of lambs.



65876-B

Figure 13.—Pushing the pelt away from the foreflank and shoulder

Cut or nick the membranes on the side of the leg just over this lamb joint. Break the joint open where it has been cut by pressing the foot sideways. The operator may hold the leg against his knee if necessary.

While the pelt is still hanging to and stretching the tail, push the knife in beside and above the anus, cut clear around it and loosen the anus so that 10 or 12 inches of the colon can be pulled up and out of the body cavity. The colon should

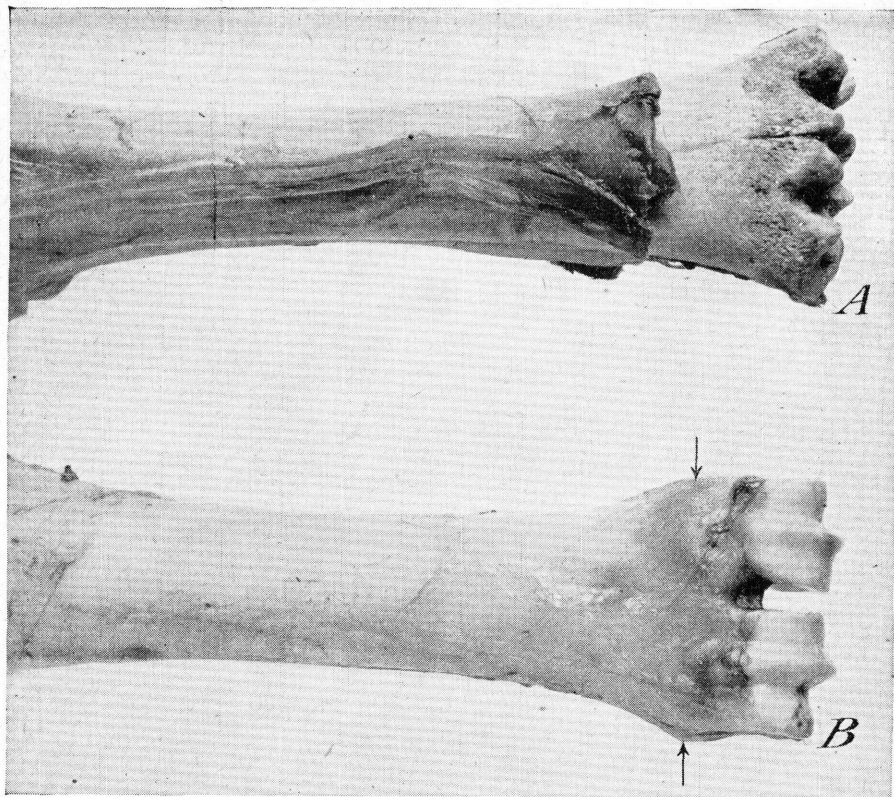


65877-B

Figure 14.—Fisting the pelt free from the back. The next step will be to cut the pelt free from the dock.

be emptied or tied before it is dropped back into the body cavity so that its contents will not foul the carcass. Cut and pull the skin free from the dock and pull and fist it free from the back. If the fell or muscles start to tear, it is often possible to start fisting below the break, working up and around it, thus avoiding further tearing.

Pull the pelt down the neck (fig. 16) to the ears and cut off the head through the atlas joint. Wash the carcass with water as hot as the hand can stand, in order to clean and



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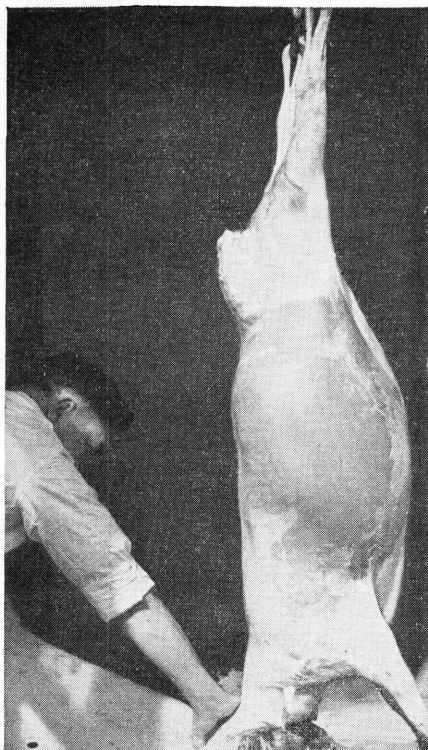
Figure 15.—The two types of joints of the foreleg: A, the false or "lamb joint," and B, the true "mutton joint" of a mature sheep. Arrow indicates the location of the lamb joint or suture.

bleach it. Wipe dry with clean cloths wrung out in hot water.

DRESSING THE CARCASS

Open the carcass down the middle from just below the cod or udder to the cartilage of the breastbone or brisket (fig. 17). Be careful not to cut into the paunch. Allow the paunch and intestines to roll out and hang. Unless the lamb is full of feed the paunch should not break loose. Reach in and find the already loosened colon and pull and work it down past the kidneys. Grasp and remove the bladder, taking care not to spill its contents on the meat. The rest of the operation is similar to that of dressing hogs. Roll out the paunch slightly and get a firm

grip on it with the left hand where it joins the intestines. Work the right hand into the body cavity, up the ribs and behind the liver, tearing the liver free where it is attached near the right kidney. Still keeping a firm hold on the viscera, work the right hand under the paunch along the diaphragm and pull and push the organs up and from the carcass. Tie the gullet with a stout cord where it enters the chest cavity; then cut the paunch free by severing the gullet below the cord. Tying prevents the escape of digestive contents when the gullet is severed. A helper will be needed in making the tie and cutting the gullet. Lay the offal in a clean tub for later inspection.



65879-B

Figure 16.—Pulling the pelt free from the neck. This should be easily accomplished if the sides have first been fisted free.



65881-B

Figure 17.—The fingers of the left hand hold the internal organs away from the knife while the carcass is opened down the front.

Split the breastbone or brisket. If the animal is over 1 year old, a saw may be needed as well as a knife. To remove the pluck (heart and lungs), cut the white part of the diaphragm, cut free the pluck on each side of the brisket, loosen the large blood vessels along the backbone, and pull the pluck down and out (fig. 18). Wash the carcass and wipe it dry.



65883-B

Figure 18.—Removing the heart and lungs after splitting the brisket

CARE OF INTERNAL ORGANS

Use care in removing the liver, as it is a choice product. Remove the gall bladder from the liver by pinching under the neck or small end of the bladder with the thumb and forefinger. Tear or cut the upper or smaller end free and pull gently to peel out the main body of the bladder. Another method is to cut it out with a knife. If the gall bladder breaks and the gall spills on the liver or carcass, wash promptly to remove any possible bitter flavor.

The liver, heart, and tongue should be carefully washed in cold water and hung up to chill. The head may be split open and the brains removed. The caul fat, if

clean, may be used in cooking. The small intestines are separated easily from the fat by pulling carefully with the hands. It is always advisable to strip the contents from the intestines and open the fourth or true stomach to see if tapeworms or stomach worms are present. The lungs and liver should be examined also for the presence of other parasites or disease that may be making headway in the flock.

The freshly slaughtered carcass and edible organs should be chilled to a temperature above freezing and below 40° F. as soon as possible. Fresh meat, in commercial establishments, is held at about 34° for storing and ripening.

CHILLING LAMB CARCASSES

The changes that occur in the carcass of a lamb must be controlled by proper temperatures if a desirable quality of meat is to be available over a reasonable period. The functions of proper temperature in storage are (1) to prevent or delay the growth or action of molds, bacteria, yeasts, and other agents that develop taint, or spoilage, and (2) to permit the normal action of enzymes or other ripening agents present in meats that increase the tenderness of the meat during the first week or 10 days after slaughter.

The freshly dressed carcass should be protected from dust and sunlight and hung where it will chill promptly. If natural temperatures are above 40° F., artificial refrigeration is desirable. In properly designed dry coolers, well-fattened lamb is often held for 2 weeks or longer. At temperatures above 40° mold and other surface contamination develop more rapidly and the storage period would have to be relatively shorter.

If natural temperatures are low, an effort should be made to protect the meat from freezing so that the

ripening process will not be delayed or stopped. After about a week the ripened cuts are often put in a room, pantry, or other storage place where freezing temperatures prevail.

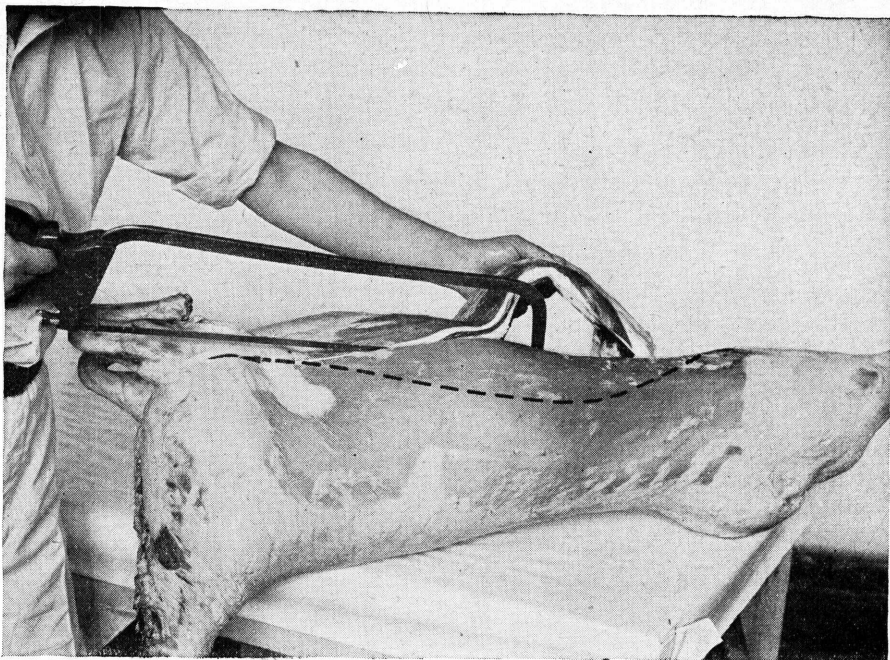
A clean carcass, protected by dry, unbroken fell or fat, will keep for a longer time than thin meat or meat that has been contaminated in dressing or gashed so that the moist lean meat is exposed.

It is often necessary to use portions of a lamb within 4 or 5 days after the animal has been dressed. The braising or stewing cuts should be chosen for this early use if possible, thus allowing the chops and roasts time to ripen properly.

CUTTING THE CARCASS

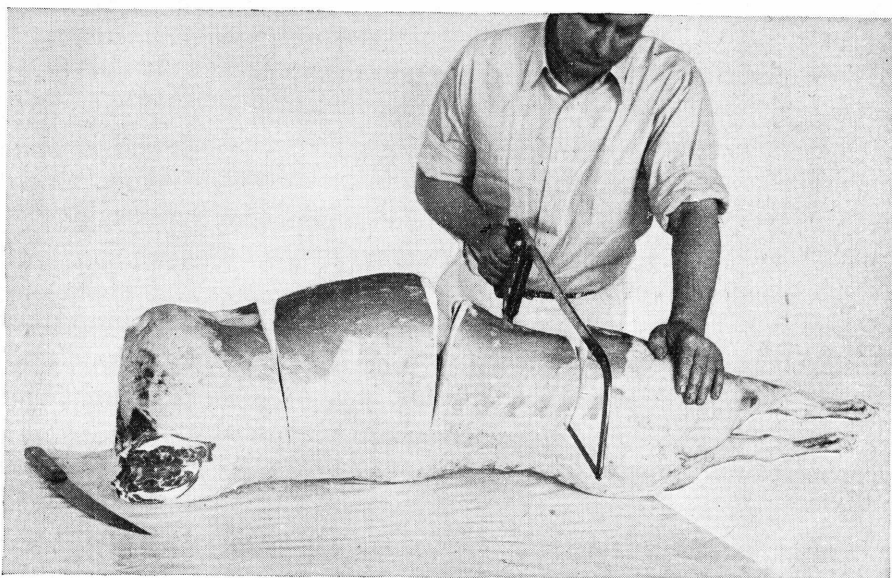
Cutting methods vary with custom or locality, but all methods follow the main principle of separating the thin parts, which are more suitable for braising, from the thicker parts, which are adapted to roasting and broiling. With that principle as a guide, remove the thin portions, such as the breast, flank, plate, brisket, and foreleg, by cutting and sawing on a line beginning at the front part of the hind leg and running to a point just above the first joint of the foreleg (fig. 19). More of the rear flank and lower rib can be left on the breast to make shorter chops by running the line higher at the rear, but the cut across the lower shoulder should be close to the joint in the foreleg so as to leave the shoulder roast as large as possible.

A full-size shoulder roast is cut off between the fifth and sixth ribs (five ribs on the shoulder) (fig. 20). Leave all the remaining ribs on the rib cut, or rack, and cut and saw the loin from the long legs through the small of the back or just forward of the hipbones. The loin and rib cuts need not be separated from each other until cut into chops.



65888-B

Figure 19.—The first step in cutting a lamb carcass—removing the breast. This carcass has been cut for long chops. If the cut had been made along the dotted line, there would have been a larger proportion of breast, and shorter chops.



65889-B

Figure 20.—Making a five-rib shoulder, a regular rib cut, loin, and a long-cut leg. Note that the breast and neck have been removed.



65891-B

Figure 21.—Splitting the cuts down the center of the backbone. The cuts shown are, (A) shoulders, (B) ribs, (C) loins, and (D) legs.

The neck can be cut and sawed off flush with the top of the shoulder for braising with the breast, or left on and roasted with the shoulder.

SPLITTING THE CARCASS

The whole carcass may be split down the center of the backbone with a saw before cutting. The beginner, however, will find it easier to divide the carcass into the "whole-sale" cuts first, splitting each cut separately (fig. 21). When only one side of the breast, a single leg, or a shoulder is needed at a time, it is probably best to remove only the desired cut, allowing the remainder of the carcass to hang in chilled storage.

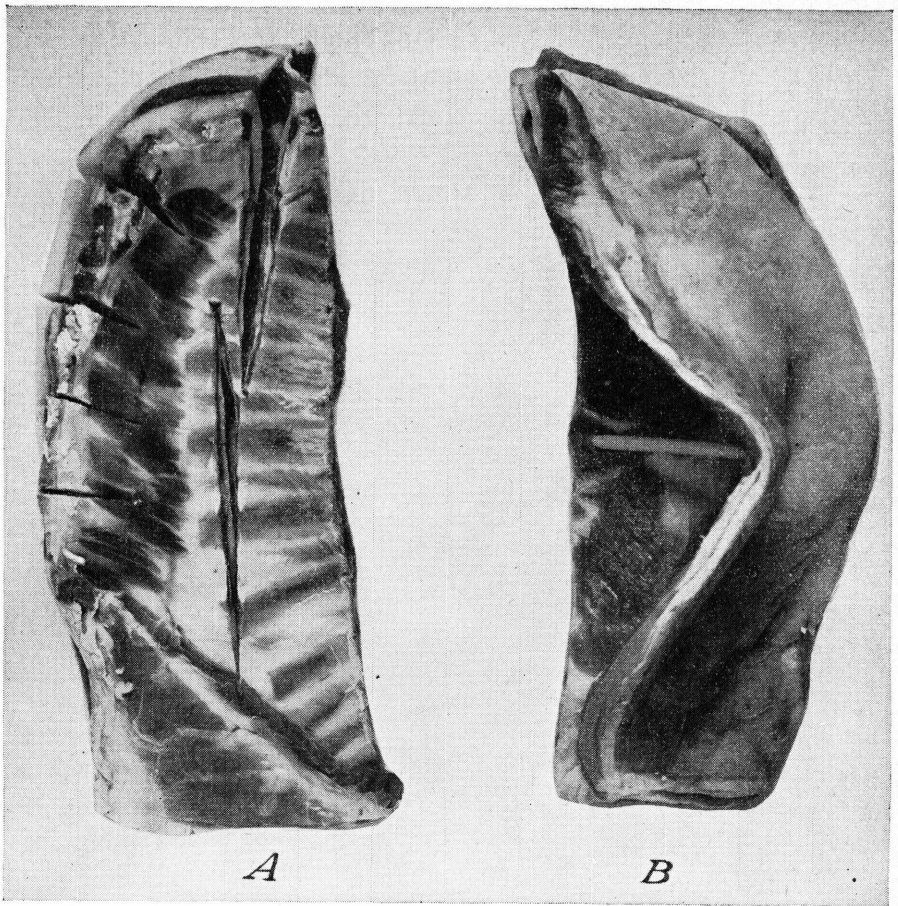
TRIMMING LAMB CUTS

The breast can be cut into medium to large pieces for stewing. Small

pieces of sharp bone may be kept out of the stew by careful cutting and by using the saw instead of the cleaver for the bones. The breast may also be boned and rolled or made into a pocket roast and stuffed with the ground flank or other dressing (fig. 22).

Each shoulder will yield two or three rib chops and one or two shoulder chops if sliced along the rib and across the lower or arm side. The remainder of the shoulder may be too small to roast but can be added to the stew. The full-cut shoulder makes an excellent roast. If boned (fig. 23), it is easy to carve and compares favorably with the more popular leg.

The legs are trimmed smooth by removing the flank muscle and excess fat and cutting off the shank about where the tendons enter the meat. The forward end of the long-cut leg may be trimmed further by

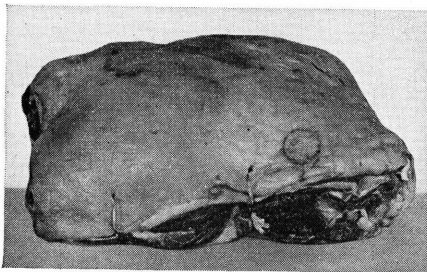


25016-C

Figure 22.—A, Breast of lamb prepared for braising; B, a similar cut opened for a pocket roast.

cutting off two or three chops (fig. 24).

The rib cuts also may be used for roasts or made into chops (fig. 25)

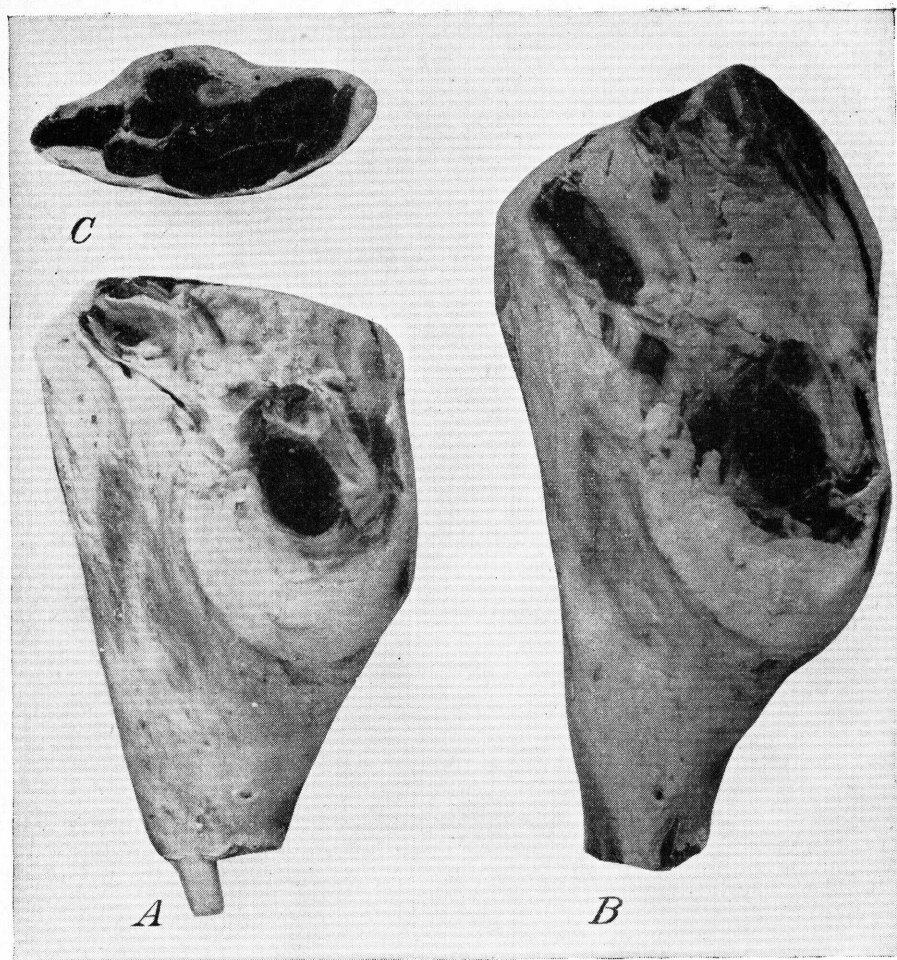


40976-B

Figure 23.—Cushion-style, boneless shoulder roast.

by slicing between the ribs and cutting the backbone with a saw, cleaver, or heavy knife.

As previously mentioned, the quality of the meat depends, in part, on the degree of finish of the animal at the time of slaughter. Chops from a lamb that has not been fattened will have very little fat on the outer edge, as shown in the rib cut at the left in figure 26. Meat of higher quality may be obtained from a well-bred, well-fattened lamb (fig. 26, right). Although the higher-quality ribs are more desirable, either type should prove acceptable if prepared properly.



25014-C

Figure 24.—Two methods of trimming a leg of lamb for roasting: A, French method with chops (C) removed; B, long-cut leg.

The loin cuts are made into chops by first splintering the backbone down the center and then slicing the chops crosswise of the bone. The chops are cut usually $\frac{3}{4}$ to 1 inch thick. The loin chops correspond to the T-bone steaks from a beef carcass. Double, or English, loin chops are made from a loin which has not been split down the backbone.

The fell, or paperlike outer membrane, is removed from each rib or loin chop by starting at the lower end. This membrane peels off more

easily when the chop is dry and cold than when it is moist and warm. The main reason the fell is removed from chops is that it becomes disagreeably hard in frying. However, the fell is left on the shoulder and leg roasts as it prevents the evaporation of some of the meat juices, thus causing the roast to cook more rapidly. Clean fell on roasts or chops or stew meat will not affect the flavor of the cooked lamb.

Lamb trimmings or the boned breast, neck, or shoulder may be ground and made into a meat loaf

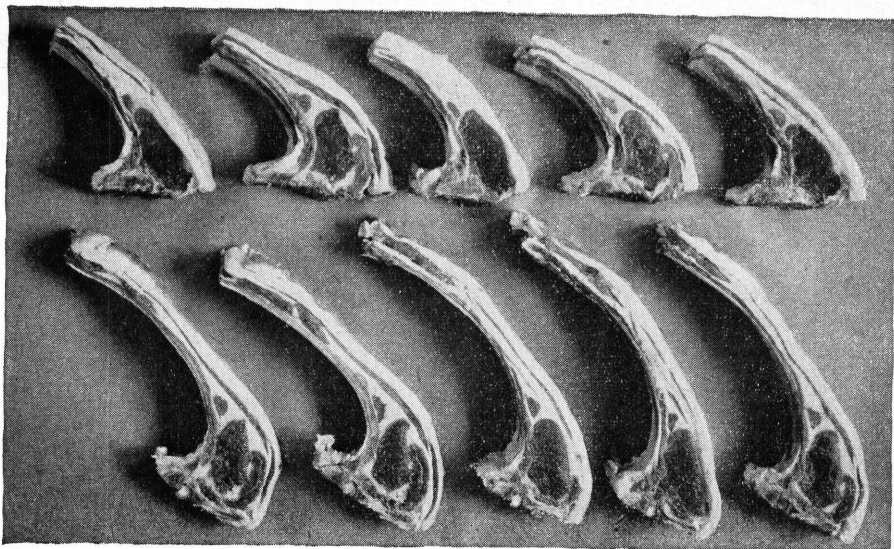


Figure 25.—Two types of lamb chops obtained by different methods of cutting. The short chop in the top row are the result of cutting along the dotted line shown in figure 19. The long chops in the lower row are from a carcass cut as in figure 19.

or patties. Some prefer about one-fourth pork ground with the lamb to lamb alone.

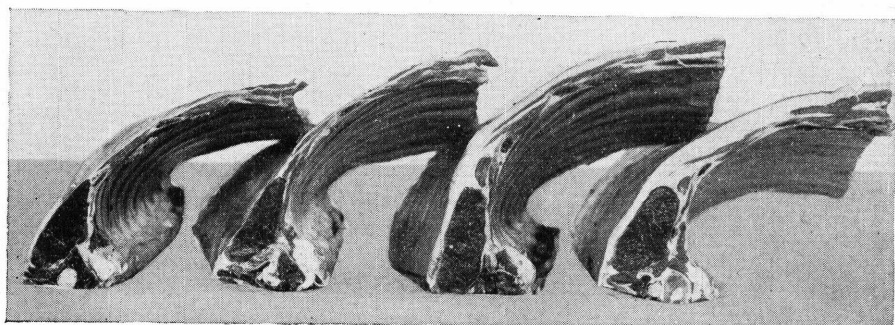
PRESERVING THE MEAT

When lamb is to be kept longer than 2 or 3 weeks the chilled storage of a refrigerator or pantry will rarely be satisfactory. The meat must be frozen, canned, or cured.

FREEZING

Lamb may be frozen and kept for as long as 9 months to 1 year if protected by adequate wrapping and kept at near-zero temperatures. It should not be aged for more than 1 week before it is cut and wrapped for freezing.

Successful freezer storage of meat depends on protecting it from both



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Figure 26.—Illustrating the different quality of lamb ribs. The rib cut at the left is from a lamb that was not well muscled or fattened. The next cut has slightly more meat and fat and the third still more. The cut at the right is from a well-fattened lamb and shows a larger development of muscle tissue.

moisture loss due to evaporation and oxidation of the fat by air. This breakdown of fat is the greatest cause of off flavors in meat stored at temperatures of 15° F. or lower. Containers such as glass freezer jars or tin cans are useful for freezer storage because they completely bar the passage of air and water vapor to and from the food. Large pieces of meat may not always fit into such containers, however, and may have to be wrapped in a flexible film.

Many commercial wrapping materials are available for home preparation of meat for freezing. Aluminum foil, MSAT 87 cellophane, polyethylene, and pliofilm are examples of vapor-resistant films. Paper wrappers should be used with caution because paper fibers may act as small wicks in conducting moisture out of the package. Each piece of meat should be so wrapped as to exclude as many air pockets as possible from the package. The popular "drug store" wrap is well suited to meat preparation. Tie, heat-seal, or tape the packages securely, and spread them for prompt freezing. The packages of frozen meat may be piled or boxed for storage in the freezer.

The prepared lamb packages should be frozen at 0° F. or below. A temperature of 0° is generally most satisfactory for storing frozen lamb, although temperatures as high as 15° have proved adequate when all air was excluded from the package. Temperatures higher than 15° will permit the growth of spoilage micro-organisms.

Cooking of lamb may be begun either after the meat has thawed or while it is still frozen. Tests have shown that there is little difference in resulting palatability. Of course, the cooking time is longer if the meat is frozen, roasts requiring about one-third more time to cook and chops about twice as long as the same cuts either fresh or thawed. A temperature of 300° F. is recom-

mended for roasting frozen lamb, whereas either thawed or fresh roasts should be cooked at an oven temperature of 325°.

Strict cleanliness is essential throughout the processing of meat for freezing, as well as in all handling of meat. Freezing preserves not only the meat but also many of the bacteria that may be present. Clean hands, tools, utensils, and other materials will keep bacterial contamination of meat at a minimum and thus retard spoilage, both before and after thawing. Thawed meat will keep about as well as similar unfrozen meat, but many chemical changes will have begun during a long freezer storage period. The thawed lamb should therefore be used promptly or stored for a short time in a refrigerator. Meat may be thawed either at room temperature or in a refrigerator. The latter is preferable when time permits and is necessary if the thawed meat is to be kept uncooked for more than 36 hours.

CURING

Lamb is easily and quickly cured, but there is the disadvantage that the cuts dry rapidly after smoking and tend to become strong in flavor. Ribs, loins, and breasts that have been cured and smoked may become disagreeably dry and strong in flavor after only 3 or 4 weeks in storage. Smoked legs store better than shoulders, but even legs will become fairly dry and hard after 2 to 4 months' storage at room temperature. Some families prefer the "gamey" flavor of cured lamb and cure several cuts for special use. Newly smoked lamb may be boned and canned in the pressure cooker by those who like smoked flavor but wish to prevent the meat from drying.

Salt is used in curing to preserve the meat, sugar to improve the flavor, and saltpeter to set the red color

in the muscle tissue. Salt alone will cure the meat, but most people prefer the so-called sugar cure consisting of salt, sugar, and saltpeter. Meat to be cured should be from carcasses that have been promptly chilled to a temperature of about 36° F. The standard temperature is from 36° to 38° for the meat, for the curing mixture, and for the curing room throughout the curing period. If the temperature of the pack rises above 40° during curing there is some danger of spoilage. Temperatures of approximately 32° or below retard or stop the curing process.

Chilled lamb is normally put in cure while fresh, or within 1 or 2 days after slaughter. If frozen, it should be thawed, in air or water, before being packed down in cure. It should be kept from freezing before it is salted. Split the rib cuts, loins, and other pieces down the center of the backbone and remove the spinal cord before the meat is put in cure. The soft cord spoils easily.

BRINE METHOD

There are various recipes for sugar-curing lamb by the brine method. A standard formula, used also for curing pork, calls for 8 pounds of salt, 2 pounds of white or brown sugar, and 2 ounces of saltpeter. The mixture is dissolved in 6 gallons of cold water, which makes a mild brine. Pack the chilled, trimmed meat carefully and closely in a clean crock or well-scalded, odorless hardwood barrel and pour in the cold (36° to 38° F.) brine until the pack begins to shift and float. When the brine has reached all surfaces of the meat, use a clean, hardwood board and a clean stone to weigh down the meat. Cover the pack well with the brine.

Six gallons of brine should cover 100 pounds of meat. If the size or shape of the container or the loose

packing of the meat makes 6 gallons insufficient, more brine should be made and used to submerge the meat.

Overhaul the meat on the third to fifth day. This means to remove the meat from the brine, pour out the pickle, repack the meat, and recover with the same brine. Overhauling serves to remix the brine and to shift the meat so that all pieces will be exposed to the brine.

The thin cuts, such as the breast, ribs, and loins, should be sufficiently cured, even in this mild brine, in 10 days to 2 weeks, depending on their size. Legs and shoulders will require a second overhauling when the thin cuts are removed and should stay in cure from 25 to 40 days. Legs weighing from 5 to 6 pounds should be ready for smoking in 30 to 35 days.

If the brine becomes sour or ropy, and the meat is still sound, remove the meat and scrub it in hot water, wash and scald the container, boil, skim, and cool the brine, and pour it back on the meat. It would be safer to make new brine and discard the old.

DRY METHOD

A 5-4-4 curing mixture has been used successfully for dry-curing lamb. This mixture calls for 5 pounds of salt, 4 pounds of sugar, and 4 ounces of saltpeter for each 100 pounds of lamb. Mix the ingredients thoroughly, sprinkle a little of the mixture on the bottom of the clean container, and rub and pat the proportionate amount on each piece of lamb, fitting the pieces carefully into the pack. Apply about two-thirds of the mixture the first time, the remaining third being used when the meat is overhauled 3 to 5 days later. The meat may be left in the cure until used or may be removed for smoking on the same schedule given for the brine cure.

SMOKING CURED LAMB

Scrub cured lamb thoroughly with hot water and a stiff brush and hang it up to drain and dry. It may be exposed to hardwood smoke for about 2 days at a temperature of 100° to 120° F. in the same manner as cured pork. The meat may be removed from the smokehouse as soon as it is satisfactorily colored, or left in for longer or intermittent smoking, if desired.

STORING CURED LAMB

If smoked lamb cuts are to be stored at ordinary room temperatures for several months, they should be cooled and wrapped in paper and muslin, the same as is customarily used for pork. Attention is called again to the fact that cured lamb dries rapidly, particularly the thinner cuts.

CANNING

Canning is a satisfactory method of preserving lamb, as well as other meats. Home and Garden Bulletin No. 6, Home Canning of Meat, prepared by the Bureau of Human Nutrition and Home Economics, describes safe home methods for meat canning.

PRESERVING LAMB PELTS

Lamb pelts to be preserved may be hung over a board or wire, skin side out, to cool and dry. They may also be spread on the floor, wool down, and salted. Care should be taken to put salt on the edges, legs, and head sections. Salted pelts may be piled on top of one another, all pelts fleece down. Pelts will be cured in from 15 to 30 days.

